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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/688,588

10/18/2003

Robert Kincaid

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EXAMINER

SIMS, JASON M

ART UNIT

PAPER NUMBER

1631

NOTIFICATION DATE

DELIVERY MODE

06/02/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPOPS.LEGAL@agilent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/688,588	<b>Applicant(s)</b> KINCAID, ROBERT	
	<b>Examiner</b> JASON M. SIMS	<b>Art Unit</b> 1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 14 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-22, 40-50 and 56-60 is/are pending in the application.
- 4a) Of the above claim(s) 15, 16, 21 and 48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14, 17-20, 22, 40-47, 49-50, and 56-60 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

Applicant's arguments, filed 1/14/2008, have been fully considered. The following rejections and/or objections are either reiterated or newly applied. They constitute the complete set presently being applied to the instant application.

Applicants have amended their claims, filed 1/14/2008, and therefore rejections newly made in the instant office action have been necessitated by amendment.

Claims 15, 16, 21, and 48 have been withdrawn as being drawn to non-elected subject matter.

Claims 1-14, 17-20, 22, 40-47, 49-50, and 56-60 are the current claims hereby under examination.

### ***Claim Rejections - 35 USC § 112***

#### ***Response to Arguments:***

Applicant's arguments, filed 1/14/2008, with respect to all the rejections under 35 USC 112 have been fully considered and are persuasive because of applicant's arguments and amendments to the claims. Therefore, the rejections have been withdrawn.

#### **The following rejections are being newly applied:**

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-14, 17-20, 22, 40-47, 49-50, and 56-60 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 43, 56, and all claims dependent therefrom comprise the vague and indefinite claim wording “converting data values of said data items to graphical representations of said data values of said data items to be displayed, wherein n x m graphical representations are provided that graphically represent variations in the data values of the data items.” It is specifically unclear as to what the term “graphical representations” now refers because it appears that the graphical representations represent the data values, but then later in the same step defines the graphical representations as representing variations in the data values. It is vague and indefinite as to whether the term “graphical representations” represents the actual data values or variations in the data values. Clarification via clearer claim wording is required.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-14, 17-20, 22, 40-47, 49-50, and 56-60 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

The claims are drawn to the broad subject matter of displaying and manipulating any type of data.

A claim of an invention directed to a judicial exception, such as computational method, must be limited only to statutory embodiments - thus, if the claim is broader than the statutory embodiments of the claim, the Examiner must reject the claim as non-statutory.

In the instantly claimed invention, the claims are drawn to broader subject matter than the statutory embodiments of the claim. For instance, applicant states in their response to arguments filed 1/14/2008, on page 2, that the claimed invention has a specific use as exemplified in the specification in Figs. 1-3, but the claims encompass much broader subject matter.

If the specification discloses a practical application of a § 101 judicial exception, but the claim is broader than the disclosure such that it does not require a practical application, then the claim must be rejected. In the instant case, the claims encompass a computational method of displaying and manipulating any type of data. Such method is not directed to any practical application of thus identified manipulation of any type of data.

The examiner does not dispute the tangible prong (the result is being displayed) and concrete prong of patentability criteria. Examiner maintains, however, that the method as claimed - not as disclosed in the specification - must produce a useful result and that claim must be limited only to statutory embodiments. The breadth of the claims encompasses displaying any type of manipulated data representation, other than the cell data having the highest degree of upregulation (addressed in Figure 3), which data, apart from being a type of arranged data, may have different functions, representations, applications, etc.. No practical application for displaying such different types of data is disclosed. The claims are thus broader than the statutory embodiments of the claim. When the specification discloses a practical application of a § 101 judicial exception, but the claims is broader than the disclosure such that it does not require a practical

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application, then the claim must be rejected. Thus, as the claims do not satisfy the “useful” prong of “useful, and concrete, and tangible” criteria, the claims are not statutory.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1, 43, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Warrington et al. (P/N 6,884,578) in view of Balaban et al. (6,185,561) as evidenced by Byrd et al. (US P/N 5,826,260).

The claims are directed to a method for displaying and manipulating data to facilitate identification, trends, correlation, or other useful relationships among the data comprising of steps of providing data arranged in a matrix, converting the data to graphical representations, displaying the graphical representations, sorting the data

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based on comparison values, reordering the data, and displaying the rearranged data in the matrix.

Warrington et al. teaches claims 1, 43, and 56 at col. 12, lines 41-67, col. 13, lines 1-38 and col. 25, lines 25-44. Warrington et al. discusses at col. 12 and 13, inputting data items associated with entities to be observed, where the data is arranged in an  $n \times m$  matrix, as it is stored in table form with a database or relational database and the data is converted to graphical representations as they are displayed in readable database form, such as genbank. Furthermore, Warrington et al. describes a relational database of at least three different tables, which reads on a  $c \times d$  matrix where  $c$  is an integer equaling the number of rows in the  $c \times d$  matrix and  $d$  is an integer equaling the number of columns in the  $c \times d$  matrix. Warrington et al. discusses at col. 25, using GENECLUSTER to analyze complex data to form SOMs to detect expression patterns.

Warrington et al. do not explicitly teach displaying the data in the tables.

However, Warrington et al. do reference Balaban et al. col. 13, lines 35-36, which has been incorporated by reference and Balaban et al. teaches at Fig. 2A a display screen to display mined expression data, i.e. manipulated data.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to want to display the manipulated data because it is a typical goal of the data miner to want to see the results of their data manipulation step.

Warrington et al. do not explicitly teach a  $c \times d$  matrix that is smaller than the  $n \times m$  matrix.

Balaban et al. at col. 2, lines 23-67 teaches basic methods and capabilities of the data mining invention wherein the data mining involves different visualization techniques and different formatting of resulting information to better provide a user with easier visualization and better interpretational abilities. The invention of Balaban et al. is to be able to mine data to provide a user with more helpful and better organized data and visualized data, which implies that its capable of displaying different size tables of information including a smaller matrix of data such as a  $c \times d$  matrix that is smaller than an  $n \times m$  table.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to want to be able to mine data and have different visualization techniques as taught by Balaban et al. because it can be more effective and is a goal of the researcher to be able to visualize and manipulate data in customizable ways in order to be able to more effectively interpret experimental data.

Warrington et al. do not explicitly teach sorting and thus reordering the order of arrangement of the rows of data in the  $n \times m$  matrix based on a comparison of the values of pseudo-data vector with values of the data items, wherein each row of data items is converted to a data vector for comparison with said pseudo-data vector.

Balaban et al. at col. 3, lines 5-11 teaches a query that can be submitted to the relational database tables wherein it extracts information from a larger  $n \times m$  matrix of data and can display or sort and thus reorder the data, such as those genes where the gene expression value is greater than or equal to 100. The stored data is not necessarily in an order from least expression value for a gene to greatest expression



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value for a gene. Thus the query itself minds the data of those genes whose expression value is greater than 100 and thus reorders the data to be better visualized by a user.

Furthermore, Balaban et al. at col. 5, lines 54-56 describes an expression mining database where the user can query and mine the data, wherein the type of querying can vary depending on the user and questions that want to be answered. It is therefore implied that the mined data as taught by Balaban et al. incorporates the capability of sorting and reordering the expression data as it is a common goal of any data mining to be able to sort and reorder data. Moreover it is evidenced by Byrd, Jr et al. at the abstract and claims 12, 14, and 28 that data can be reordered based on query elements when being mined and it is common to those of ordinary skill in the art to implement reordering functionality when designing data mining tools.

It would have been obvious to one of ordinary skill in the art at the time of the instant invention to want to be able to mine data by sorting and reordering the data and have different visualization techniques as taught by Balaban et al. because it can be more effective and is a goal of the researcher to be able to visualize and manipulate data in customizable ways in order to be able to more effectively interpret experimental data.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Sims, whose telephone number is (571)-272-7540.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Marjorie Moran can be reached via telephone (571)-272-0720.

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Papers related to this application may be submitted to Technical Center 1600 by facsimile transmission. Papers should be faxed to Technical Center 1600 via the Central PTO Fax Center. The faxing of such papers must conform with the notices published in the Official Gazette, 1096 OG 30 (November 15, 1988), 1156 OG 61 (November 16, 1993), and 1157 OG 94 (December 28, 1993) (See 37 CFR § 1.6(d)). The Central PTO Fax Center number is (571)-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

// Jason Sims //

/Michael Borin, Ph.D./  
Primary Examiner, Art Unit 1631